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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,232	09/17/2003	Mark S. Knighton	4956P002D	3365

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EXAMINER

BARTH, VINCENT P

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,232

Applicant(s)

KNIGHTON ET AL.

Examiner

Vincent P. Barth

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 12, 15-18 is/are rejected.
- 7) ☒ Claim(s) 7, 11, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0903.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first and second paragraphs of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6, 10, 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Referring to Claims 6 and 10, the limitation in which the first capture method uses active ranging renders the claims indefinite under §112, for lacking an antecedent basis for the feature. See MPEP §2173.05(e). In particular, the phrase “active ranging” does not appear in the Specification, and the discussions involving a “distance” between the optics and the subject do not appear to explicitly set forth an active range finding device. The Examiner respectfully requests that if Applicants provide an explanation of the claim language rather than an amendment, that Applicants cite the particular language in the Specification or elements in Drawings upon which such arguments rely. In the alternative, the Claims are rejected under §112 first paragraph as not providing an enabling disclosure. However, the claims have been discussed below as each may best be understood.

4. Referring to Claim 17, the limitation in which, “a bearing mounted to rotate relative to the shaft” is rejected as being incomplete for omitting essential structural cooperative

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relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01, and, In re Collier, 397 F.2d 1003, 158 U.S.P.Q. 266 (27 Jun., 1968). The omitted structural cooperative relationships are that there is nothing coupling the bearing to the other components. For example, the portion of the claim recited does not couple the bearing to the shaft, it merely states that the bearing rotates relative to the shaft. In other words, the claim states that the bearing is “mounted”, but does not recite a component to which the bearing is mounted. In this connection, the Examiner respectfully requests that whether Applicants provide an explanation of the claim language or an amendment, Applicants should cite the particular language in the Specification or elements in Drawings which correspond to the new claim language and/or arguments. Upon receiving a reply to the instant Office Action either explaining the propriety of the claim, or amending the claim, the limitations will be treated further on the merits, and the Examiner would like to assure Applicants that they will be afforded an opportunity to respond to any rejections before any Office Actions are made final.

5. Referring to Claim 18, the fourth paragraph of 35 U.S.C. §112 provides that, “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers”. Accordingly, Claim 18 inherits the §112 second paragraph rejection of Claim 17, and is therefore rejected as well. However, upon receiving a reply to the instant Office Action either explaining the propriety of Claim 17, or amending said claim, the limitations in Claim 18 will be treated further on the merits.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 5, 6, 8-10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinclair, et al., U.S. Pat. No. 5,747,822 (5 May 1998).

8. Referring to Claims 1 and 2, Sinclair discloses a system for capturing a first two-dimensional image of an object O with a monochrome camera 22 by a first method (i.e. monochromatically), moving the object O within the field of view by a rotating stage 13 such that a different aspect of the object may be imaged, and then capturing a second two-dimensional image of the object with a color camera 27 by an alternative method (i.e., polychromatically), and combining the images by a digitizing means 32 such that a three-dimensional information of the surface contour of the object O derived (see Fig. 1). Claim 2 sets forth language in which the combination of steps are “to improve quality”, however, Applicants have not set forth any steps or manipulative differences in the prior art so as to distinguish the instant claim with the prior art. See MPEP §2111.02 citing In re Otto, 312 F.2d 937, 938. In the present context, although the limitation is in the body of the claim rather than the preamble, the limitation nevertheless does not result in different steps in the method, when the instant claim is read with the broadest reasonable construction.

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9. Referring to Claim 5, Sinclair discloses a system for capturing a first two-dimensional image of an object O with a monochrome camera 22 by a first method (i.e. monochromatically), moving the object O within the field of view by a rotating stage 13 such that a different aspect of the object may be imaged, and then capturing a second two-dimensional image of the object with a color camera 27 by an alternative method (i.e., polychromatically), and combining the images by a digitizing means 32 such that a three-dimensional information of the surface contour of the object O derived (see Fig. 1). The claim sets forth language in which the combination of steps are “to improve quality”, however, Applicants have not set forth any steps or manipulative differences in the prior art so as to distinguish the instant claim with the prior art. See MPEP §2111.02 citing In re Otto, 312 F.2d 937, 938. In the present context, although the limitation is in the body of the claim rather than the preamble, the limitation nevertheless does not result in different steps in the method, when the instant claim is read with the broadest reasonable construction.

10. Referring to Claim 6, Sinclair discloses monochrome camera 22 and the color camera 27 generically, thus leaving latitude to those practicing the invention to use alternative embodiments understood by those in the art to be within the scope of the disclosure. Thus, implicit in the Sinclair reference is that a range finding device be used such that the cameras may be appropriately focused. See MPEP §2144.01. Moreover, those of ordinary skill in the art would characterize the cameras 22 and 27 in the Sinclair reference as passive imaging cameras, thus such claim language is also implicit in the Sinclair reference.

11. Referring to Claims 8 and 9, Sinclair discloses a system for capturing a first two-dimensional image of an object O with a monochrome camera 22 by a first method (i.e.

monochromatically), moving the object O within the field of view by a rotating stage 13 such that a different aspect of the object may be imaged, and then capturing a second two-dimensional image of the object with a color camera 27 by an alternative method (i.e., polychromatically), and combining the images by a digitizing means 32 such that a three-dimensional information of the surface contour of the object O derived (see Fig. 1). Claim 9 sets forth language in which the combining the capture methods serves “to improve quality”, however, such language is a non-limiting statement of intended use, which does not distinguish the invention over the prior art. Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP§2114, citing In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device *is*, not what a device *does*.” Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

12. Referring to Claim 10, Sinclair discloses monochrome camera 22 and the color camera 27 generically, thus leaving latitude to those practicing the invention to use alternative embodiments understood by those in the art to be within the scope of the disclosure. Thus, implicit in the Sinclair reference is that a range finding device be used such that the cameras may be appropriately focused. See MPEP §2144.01. Moreover, those of ordinary skill in the art would characterize the cameras 22 and 27 in the Sinclair reference as passive imaging cameras, thus such claim language is also implicit in the Sinclair reference.

13. Referring to Claims 15 and 16, Sinclair discloses all of the limitations claimed, but does not explicitly disclose that a plurality of lens and aperture combinations is used, or that such lenses are contained in a lens barrel. Sinclair discloses monochrome camera 22 and the color

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camera 27 generically, thus leaving latitude to those practicing the invention to use alternative embodiments understood by those in the art to be within the scope of the disclosure. Cameras have been well known to those of ordinary skill in the art to be fitted with a plurality of lenses and apertures, such that those imaging a subject may have a choice to optimize the image quality by selecting a suitable lens/aperture combination. See MPEP §2144.03. Moreover, since Sinclair discloses a camera, implicit in such disclosure is that the camera has at least a lens with a barrel to contain such lens. See MPEP §2144.01.

14. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinclair, et al., U.S. Pat. No. 5,747,822 (5 May 1998), in view of Amir, et al., U.S. Pat. No. 5,101,442 (31 Mar. 1992).

15. Referring to Claims 3 and 4, Sinclair sets forth all of the limitations claimed, but does not explicitly discuss intensity gradients in the system as a means of providing dimensional data. However, Amir discloses a system for determining the three-dimensional contour of a surface, and in which the intensity gradient of the light reflected from the surface is used to generate a three-dimensional image of the surface (col. 5, ln. 24; col. 5, ln. 67; col. 6, lns. 3-25). Amir discloses that the camera system may be any variety of generic cameras (col. 7, lns. 47-53), or a line scan camera 38 (col. 5, ln. 55) (i.e. a linear sensor array, as in the instant claim). Sinclair and Amir are analogous art, since they are from a similar problem solving area, in that each involves forming three-dimensional images by two-dimensional means. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983).

Sinclair discloses the lighting source configuration may be either a plane of light or a thin sheet

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of light (col. 6, ln. 24; col. 6, ln. 47), thus the motivation for combining the reference would have been to provide for alternative two-dimensional detector arrangements, as are found in the Amir reference. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to obtain such benefit.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinclair, et al., U.S. Pat. No. 5,747,822 (5 May 1998), in view of Bryant, et al., U.S. Pat. No. 5,614,981 (25 Mar. 1997).

17. Referring to Claim 12, Sinclair discloses monochrome camera 22 and the color camera 27 generically, thus leaving latitude to those practicing the invention to use alternative embodiments understood by those in the art to be within the scope of the disclosure. A variety of techniques have been known to maintain the orientation of a camera with respect to a desired axis, and wherein such axis is co-linear with a gravitational plum line. Bryant discloses that the orientation of the camera may be adjusted based on the influence of gravity (col. 2, lns. 5-10). Sinclair and Bryant are analogous art, since they are from a similar problem solving area, in that each involves imaging a scene in which the line of sight of the imaging device towards the subject requires a particular orientation. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The motivation for combining the reference would have been to regulate the orientation with respect to a known axis, such as a gravitational plum line. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to obtain such benefit.

Allowable Subject Matter

18. Claims 7, 11, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, since the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations set forth therein.

19. Referring to Claim 7, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby the first capture method is intensity gradient ranging and the second capture method is stereoscopy, in combination with the remaining limitations in the claim. Referring to Claim 11, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby the first capture method is intensity gradient ranging and the second capture method is stereoscopy, in combination with the remaining limitations in the claim. Referring to Claim 13, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby a gravitational orientation unit responsive to the relative orientation of gravity comprises a pendulum having a reflective element mounted thereon, in combination with the remaining limitations in the claim. Claim 14 is allowable based on its dependency upon the claim from which it is dependent.

CONCLUSION

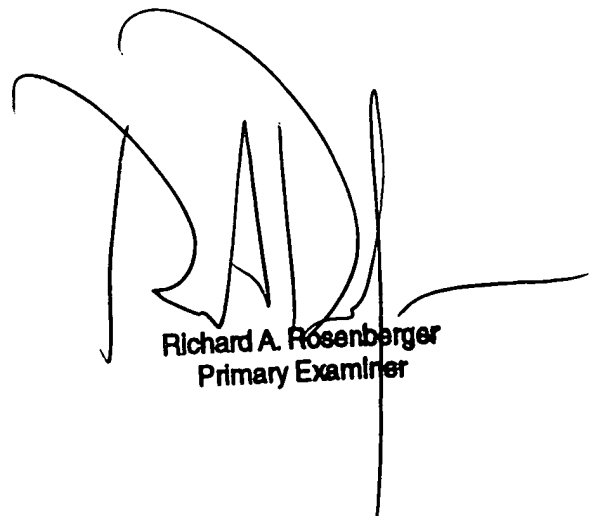
20. Applicants' Claims 1-6, 8-10, 12 and 15-18 are rejected based on the reasons set forth above.

21. Applicants' Claims 7, 11, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Any inquiries concerning this communication from the Examiner should be directed to Vincent P. Barth, whose telephone number is 571-272-2410, and who may be ordinarily reached from 9:00 a.m. to 5:30 p.m., Monday through Friday. The fax number for the group before final actions is 703-872-9306.

23. If attempts to reach the Examiner prove unsuccessful, the Examiner's supervisor is Frank G. Font, who may be reached at 571-272-2415.

24. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Richard A. Rosenberger
Primary Examiner